

CHAPTER 3

BUILDING THE FUTURE-PROOFED AND EFFICIENT DATA CENTER



Faced with surging demand for cloud-based services and data storage; and fueled by the rapid pace of digitization, rising affluence and an increasingly tech-savvy young population, big corporations are expanding their cloud infrastructure footprint.

CLOUD-DRIVEN EXPANSION

Such expansion activities are driving the global co-location data center (DC) market to grow at a compounded annual rate of 10.92% over the next five years to [hit \\$58.28 billion](#) by 2025. North America continues to be the largest market due to the presence of a large number of DCs and the rapid adoption of cloud computing. Growth has also been driven by the increasing need to reduce CapEx when commissioning new DCs and for achieving business continuity via resilient and safe co-location facilities.

[A study by IDG](#) found that about two-thirds of organizations already store at least some of their data in a co-location center. Even among organizations that rely exclusively on on-premises facilities, over 70% have made plans to migrate some data into a co-location facility. With growing server virtualization and cloud deployments, the flexibility and reliability of co-location DCs enable organizations to utilize the high-performance resources of third-party facilities while also maintaining control over valuable assets.

Often referred to as co-location DCs, [multi-tenant DCs](#) (MTDCs) configure and physically connect network services to a new enterprise tenant quickly and efficiently. They provide the required cabling infrastructure to support multiple generations of equipment

and speeds. Specifically, organizations have ready access to high-density, low-optical loss cables; simplified infrastructure management; and floor-mounted fiber entrance cabinets to maximize compute and storage density.

5G IMPACT AT THE EDGE

The advent of 5G, the fifth-generation cellular network technology that exploits new spectrum and can provide single-digit millisecond latency, will alter how DCs are designed and operated. By some estimates, DCs will be spending over half their operating budget to [support 5G-related services and applications](#) by 2025.

Amid rising demand for 5G-driven cloud-scale services, high-performing MTDCs may be re-located closer to the network's edge where the users, data and connected devices are found. The move is to fulfill the low latency and reliability requirements of applications that 5G will enable, such as self-driving vehicles, industrial automation, machine-to-machine communications and more.

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Innovative solutions needed to support these applications include a flexible migration platform; pre-terminated fiber and copper connectivity; and an automated infrastructure management (AIM) solution.

RISK-FREE MIGRATION

The ability for DCs to support 25G/40G/100G and beyond, with up to five 9s of availability, is needed in today's hyper-connected and always-on digital age.

CommScope's [High Speed Migration](#) platform uses modular building blocks to support the growing speeds and densities that new applications and architectures demand. The platform is complemented by the [SYSTIMAX](#) portfolio of connectivity and structured cabling solutions to deliver agility, manageability and scalability for growth.

For example, space-saving high-density (HD) and ultra-high-density (UD) panels provide up to 72 duplex Lucent Connectors (LCs) or 48 Multi-fiber Push On (MPO) ports per rack unit (RU) – single mode or multimode – to align with the high density of fiber ports in the spine switch layer of today's leaf-and-spine networks.

Pre-terminated and pre-tested fiber assemblies increase deployment speed and accuracy. Ultra-low-loss, pre-terminated components for single mode and multimode enable longer link spans and support for attenuation-sensitive applications.

CommScope's [imVision AIM solution](#), available with HD and UD panels, enables DCs to monitor and manage infrastructure at port level and in real time. imVision

automates the planning, implementing and documenting of moves, adds and changes; accelerates mean time to repair; and triggers alerts in real time to unplanned or unauthorized changes in the physical layer.

As enterprise and co-location facilities continue to grow in complexity, the ability to pivot quickly and easily to take advantage of new market opportunities starts with the right physical layer infrastructure and an experienced partner who can help build it.

CommScope is maximizing efficiency and performance in MTDC deployments with copper and [fiber infrastructure solutions](#) as well as AIM. Spaces are also enhanced through optical distribution frames and [fiber raceway solutions](#) for outside plant (OSP), entrance facilities, meet-me rooms and cages. These aside, CommScope's alliances with [top-performing MTDC providers](#) ensure that DC efforts drive organizational needs.



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COMMSCOPE AND EQUINIX DEMONSTRATE POWER OF MTDC ALLIANCE

Equinix has maintained the pole position in seven consecutive [Cloudscene Data Center Ecosystem Leaderboards](#) based on connectivity and density of its DCs.

After collaborating on numerous MTDC projects, Equinix became the first partner to sign on to CommScope's MTDC Alliance, a cooperative program that now includes six of the largest MTDC providers and nearly 100 service, installation and integration partners worldwide.

Equinix provides MTDC space and interconnection services for the world's top forex service providers. In forex trading, ultra-high-speed platforms move trillions in trades across the globe daily. In every network link connecting institutional traders to their markets, milliseconds mean millions.

Trading partners look to forex platform providers to provide latency equalization for a level playing field. CommScope helped one forex service provider upgrade the links from its trading partners' DCs to a matching engine, ensuring identical latency performance regardless of location. The platform's matching engine was in one building; the partners' were in two separate buildings.



SOLUTION

The project entailed installing an underground OSP without the ability to test before deployment. And so, CommScope had one shot to get it right and a short timeline of a few weeks to install and turn up the intra-campus links.

As CommScope engineers worked through the technical issues, Equinix focused on logistics and ensuring the service provider's team was kept up to date. The solution consisted of multiple runs of high-count ribbon fiber, rack-mounted fiber panels, and connector assemblies. In addition to

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precise measurement of the spooled cabling, the end-to-end optical distance of each link had to be precise.

A highly sensitive optical backscatter reflectometer (OBR) was used for precision measuring of in-building equidistant links. One trunk cable each was terminated inside buildings A and B, and one at the customer's matching engine where both cables were terminated at the OBR.

BENEFITS

The successful project demonstrates that

latency equalization in the OSP is doable. The project reaffirmed the value of working partnerships such as those between CommScope and Equinix, and within the MTDC Alliance.

The forex service provider's infrastructure is now deployed on Platform Equinix, a co-location and interconnection platform that places controls closest to users, clouds and networks. The organization can connect with other trading partners for decreased latency; and scale the business up or down based on shifting market needs.

